REMARKS/ARGUMENTS

Claims 1-18 were previously pending in the application. Claims 5-9 and 14-18 are amended and new claims 19-26 are added herein. Assuming the entry of this amendment, claims 1-26 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

On page 2, the Examiner rejected claims 1-2, 4-9, 10-11, and 13-18 under 35 U.S.C. § 103(a) as being unpatentable over Snow in view of Stewart. On page 6, the Examiner rejected claims 3 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Snow in view of Stewart and further in view of Junek.

Claims 5-9 and 14-18 are amended to delete figure references and not for the purpose of avoiding the prior-art rejections. Support for new claims 19-20 can be found, e.g., on page 4, lines 12-21, and in Fig. 6; support for new claims 23 and 25 can be found, e.g., in claims 1, 10, and 19-20; support for new claims 21, 22, 24, and 26 can be found, e.g., in Figs. 3-5.

For the following reasons, the Applicant submits that all claims are allowable over the cited references.

Claim 1 is directed to an interface circuit for interfacing between a pair of subscriber tip/ring lines and a central office of a telecommunications network. The interface circuit has filter circuitry including a blocking capacitor (e.g., capacitor **28**), which serves to separate signals between high- and low-frequency circuitry. High-frequency (e.g., ADSL) signals pass the blocking capacitor and are processed by the high-frequency circuitry while low-frequency (e.g., POTS) signals are substantially blocked from entering the high-frequency circuitry and are processed by the low-frequency circuitry. A subscriber line interface circuit (SLIC) and a coder/decoder (CODEC) located within the low-frequency circuitry serve, among other functions, to synthesize a desired impedance, e.g., that specified in the Telecordia Standard, between the tip and ring lines. However, the presence of the blocking capacitor, which is substantially connected in parallel to the SLIC, causes the effective impedance between the tip and ring lines to deviate from the desired impedance. To mitigate this problem, the interface circuit incorporates an impedance warping circuit (IWC) coupled between the SLIC and the CODEC, wherein the IWC tends to compensate for the effect of the blocking capacitor on the effective impedance. In other words, the IWC reduces the deviation of the effective impedance between the tip and ring lines from the desired impedance caused by the blocking capacitor, thereby partially offsetting the detrimental effect of that capacitor on the impedance.

Snow teaches a signal coupler for processing POTS and DSL signals (see, e.g., Fig. 3). On page 3 of the office action, the Examiner admitted that Snow does not teach an IWC configured between the SLIC and the CODEC, but then stated that:

> Stewart teaches balancing the impedance between a subscriber line and terminal circuitry thus canceling unwanted signals (column 1, lines 26-65). Stewart's method of impedance matching provides amplification free from oscillation while using only two amplifiers (column 1, lines 57-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to balance the impedance between a line and termination as taught by Stewart, where the line and impedance represent the POTS lines and SLIC/CODEC of Snow, for the purpose of removing unwanted signals. Stewart teaches an impedance matching circuit (i.e., IWC) that inherently compensates for any load on the tip and ring lines including the blocking capacitor of the high-pass filter... Therefore, Snow in view of Stewart makes obvious all limitations of the claim.

Stewart teaches a bidirectional hybrid amplifier for low-gain signal amplification of signals transmitted on a wire pair between stations in a private automatic branch exchange (PABX) (see, e.g., col. 1, lines 41-54). The hybrid amplifier of Stewart is designed to be a part of a 2-4-2 or 2-4 wire amplifier (col. 4, lines 22-27), which serves to amplify signals traveling on the wire pair in either direction while preventing unwanted signal reflections in the direction opposite to the intended direction of travel (col. 2, lines 15-44). The hybrid amplifier is impedance-matched to the wire pair to balance the amplifier's load (col. 3, lines 41-52).

Junek teaches a telephone signal repeater adapted to comply with the Telecordia Standard, i.e., an amplifier impedance-matched to a telephone wire pair having a resistance of about 900 ohms and a capacitance of about 2.16 microfarads. Junek does not address any problems related to the processing of high-frequency (e.g., DSL) signals.

First of all, the Applicant submits that the Examiner improperly combined the teachings of Snow and Stewart to reject claim 1. A modification and/or combination of reference teachings is improper unless the prior art suggests such a modification or combination. See, e.g., In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990) (the PTO erred in rejecting the claimed invention as an obvious combination of the teachings of two prior art references when the prior art provided no teaching, suggestion or incentive supporting the combination); Smithkline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 887, 8 USPQ2d 1468, 1475 (Fed. Cir. 1988) (a challenger to the validity of a patent "cannot pick and choose among the individual elements of assorted prior art references to create the claimed invention."; the challenger "has the burden to show some teaching or suggestion in the references to support their use in the particular claimed combination."). Nowhere in the specification does Stewart teach or even suggest that his circuit can be coupled between a SLIC and a CODEC of a signal coupler that processes POTS and DSL signals. In fact, the teachings of Stewart contain not even a single reference to DSL signals. Similarly, Snow does not even recognize the problem of impedance deviation on the tip/ring lines from a desired impedance due to the presence of a blocking capacitor. As a result, Snow does not even make a suggestion to mitigate that problem using any kind of circuitry. Thus, neither Stewart nor Snow provide a suggestion or incentive supporting the combination relied upon by the Examiner.

In addition, even if the combination of Snow with Stewart were proper, which the Applicant does not admit, a hybrid amplifier of Stewart is not capable of reducing impedance deviation between the tip and ring lines from a desired impedance. The hybrid amplifier is simply matched in impedance to the wire pair it is connected to so that an impedance-matched PABX wire network is not disrupted by the presence of the amplifier (col. 3, lines 45-52). If there is an impedance mismatch (disruption) elsewhere in the wire network, e.g., that caused by a blocking capacitor, the hybrid amplifier lacks any capability to reduce the effect of that mismatch on the wire-pair impedance. More specifically, the hybrid amplifier's response to the impedance mismatch is not to reduce impedance deviation from the desired impedance caused by the mismatch, but rather, it is simply to remain stable, i.e., not to go into an uncontrolled oscillator mode, in which the amplifier generates unwanted signal oscillations (col. 1, line 66, through col. 2, line 2). The Applicant therefore submits that the Examiner mischaracterized the teachings of Stewart in the rejection of claim 1. As such the rejection is improper and should be withdrawn.

For all these reasons, the Applicant submits that claim 1 is allowable over the cited references. For similar reasons, the Applicant submits that claims 10 is also allowable over the cited references. Since claims 2-9 and 11-22 depend variously from claims 1 and 10, it is further submitted that those claims are also allowable over the cited references. The Applicant submits therefore that the rejections of claims under § 103 have been overcome.

Claims 19 and 20 further detail the functions of the SLIC, the CODEC, and the IWC. The Applicant submits that none of the cited references teaches or even suggests a combination of features recited in those claims, which provides additional reasons for the allowability of claims 19 and 20 over those references. For the same reasons that claims 19 and 20 are allowable, it is submitted that new claims 23 and 25 are also allowable. Since claims 24 and 26 depend variously from claims 23 and 25, it is further submitted that those claims are also allowable over the cited references.

Each of claims 21, 22, 24, and 26 further specify that the IWC has three different differential ports and is configured to receive differentials signals from the SLIC and the CODEC at two of those differential ports and generate a differential signal provided to the SLIC at the third differential port. The Applicant submits that none of the cited references teaches or suggests such a feature, which provides additional reasons for the allowability of those claims.

In view of the above amendments and remarks, the Applicant believes that the now pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

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